Original Article

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Comparative Study of Efficacy of 0.5% Ropivacaine and 0.25% Levobupivacaine When Used in Tranversus Abdominus Plane Block for Post-Operative Analgesia in Lower Abdominal Surgeries

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Abstract

Background: Transversus Abdominis Plane Block (TAPB) is a form of regional anesthetic. After lower abdominal surgery, analgesia is provided, particularly if parietal wall pain is a major source of discomfort. The skin of the lower abdominal wall and the muscles above the Transversus Abdominis muscle can be visually blocked with local anesthetic deposition. The aim is to analysis was to see how effective 0.25 percent Levobupivacaine and 0.5 percent Ropivacaine is as an analgesic in the Transversus Abdominis Plane Block for Post-Surgical Analgesia following lower abdominal surgery. Subjects and Methods: The research included 60 patients between the ages of 18 and 60 who performed elective lower abdominal surgery and had an ASA score of I or II. Using an 18 gauge Tuohy needle and the double pop technique, the TAP block was developed. For a VAS greater than 4, rescue analgesia was administered postoperatively. Injection Tramadol was the pain reliever of choice. Rescue analgesia criteria were also reviewed. Results: In the demographic data, both categories were equal. In both classes, the diagnosis and the operations are undertaken were identical. In both classes, the decrease in the VAS score was equivalent. (P> 0.05). In both classes, the need for rescue analgesia in the postoperative phase was similar. Conclusion: Levobupivacaine and Ropivacaine have similar analgesia after lower abdominal surgery in the Transversus Abdominis Plane Block for Post-Surgical Analgesia.

Keywords: Operative Analgesia, Transversus Abdominis Plane Block, general anesthesia.

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Introduction

Rafiin 2001 was the first to use a transverse abdominal plane (TAP) block as a landmark-guided technique to achieve a field block around the Petit triangle. The local anesthetic solution must be pumped into the plane that runs between the inner oblique and transverse abdominal muscles. Since the thoracolumbar nerves from T6 to L1 penetrate this plane and provide sensory nerves to the anterolateral abdominal wall, local anesthetic administration in this plane can obstruct neural afferents and give analgesia to the anterolateral abdominal wall.

TAP blocks are used for a variety of abdominal procedures, including hysterectomy, cholecystectomy, colectomy, prostatectomy, and hernia repair, among others. Since a single-shot TAP block protects only somatic pain, multimodal analgesia plays an important part. With continuous infusion or prolonged-release liposomal local anesthetics, TAP blocks can be able to overcome the short-term problem. In order to enhance severe intraoperative and postoperative pain relief, a peripheral nerve block is used as regional anesthesia for extremity surgery.[1] It has sympathetic blocking effects, dose-saving opioid effects, improved perioperative analgesia, and other benefits over general anesthesia, including avoiding respiratory tract administration, lowering healing time and expense, and improving patient satisfaction.

Subjects and Methods

In 60 patients coming to Gandhi Hospital, the randomized sample is electively posted for lower abdominal surgeries under general anesthesia and the inclusion criteria are met and randomly divided for the study, using computer-generated randomization into two groups of 30 patients each. 60 Penda

is used in the study following acceptance from the academic ethics committee and written informed consent of patients.

Group A: TAP Block with 0.25% Levobupivacaine 20ml on each side.

Group B: TAP Block with 0.5% Ropivacaine 20 ml each side.

Inclusion Criteria

Since providing informed and written consent, sixty patients between the ages of 18 and 60 years old, belonging to ASA grades I and II, and weighing less than 20% of their ideal body weight, will be taken up for study.

Exclusion Criteria

1. Patient's dismissal
2. Allergy of some of the medications in the sample that were used
3. Coagulation Conditions / Disorders of bleeding
4. Infection at the blocking site
5. Cardiovascular, neurologic, and respiratory disease patients

Intraoperative

Electrocardiography, non-invasive blood pressure, oxygen saturation, and capnography are among the standard tests used. Intravenous ranitidine and intravenous ondansetron, midazolam, glycopyrrolate are pre-medicated in patients according to body weight. Patients are pre-oxygenated for 3 minutes with 100 percent oxygen. Both patients received 1mcg/kg of fentanyl. Both patients get 2mg/kg of Propofol. After offering Succinylcholine 1.5mg/kg, patients are intubated. For muscle relief, both patients then obtain 0.5mg/kg of Atracurium. For all patients, I.V Paracetamol 15 mg/kg was given one hour after the start of surgery.

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Postoperative

Both patients in both groups were evaluated for the occurrence and severity of pain, fatigue, vomiting, and other side effects. These tests were carried out for 30 minutes in the PACU and at 2, 4, 6, 12, and 24 hours after surgery in the Post Surgical Ward. Both patients were asked to score their pain and nausea at each point. The magnitude of the pain was assessed using a visual analog scale (VAS; 0 = no pain, 10 = the worst pain imaginable). IV tramadol 2 mg/kg with a visual analog scale (VAS) of 4 was used for rescue analgesia.

Within the first 24 hours, the time of first onset and the time of first request for analgesia criteria were stated. Both patients who complained of nausea or vomiting were given antiemetics. There were no signs or symptoms of the technique's side effects, such as local site inflammation, hematoma formation, or local anesthetic toxicity from intravascular anesthetic injection (such as dizziness, tinnitus, perioral numbness and tingling, lethargy, seizures, signs of cardiac toxicity such as an atrioventricular block of conduction, arrhythmias, myocardial depression, and cardiac arrest).

Visual analogue scale

The scale is made up of a 10 cm (100 millimeter) line with the label "no pain" at one end and the label "worst pain possible" or "pain as severe as can be" at the other end. The patient traces the line to display the severity of pain and a slide-rule-like system for the line on the side of the patient. And the clinical diagnosis is facilitated by the numeric score on the obverse. In clinical practice, VAS is the most common tool for assessing discomfort and pain relief.

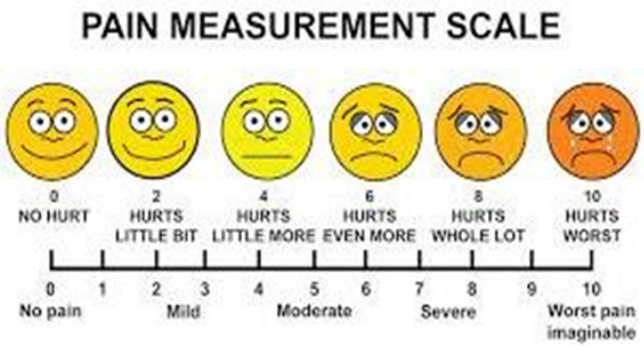

Figure 1: Visual Analogue Scale

Results

The sample involved sixty patients who were randomly assigned to one of two categories. TAP block was needed for 0.25 percent Levobupivacaine patients in group A, and

Table 1: VAS scores in both groups at different time interval

VAS (Mean +SD)	30 mins	120 mins	240 mins	360 mins	12 hrs	24 hrs
Group-A	0.31±0.82	0.59±1.1	0.88±1.3	1.2±1.5	0.9±1.3	0.31±0.8
Group-B	0.34±0.79	0.89±1.1	1.39±1.4	1.9±1.5	1.3±1.3	0.6±0.89
P-Value	0.91	0.43	0.13	0.05	0.26	0.41

0.5 percent Ropivacaine patients in group B for postoperative analgesia.

The mean VAS score difference was smaller in group A at all-time intervals, but it was not important. (with a p-value of less than 0.05). A review of VAS ratings at different times revealed that the TAP block had the same analgesic effects as Levobupivacaine and Ropivacaine in both groups. Within the first 12 hours, six patients in the LevoBupivacaine group and eight patients in the Ropivacaine group need rescue analgesia.

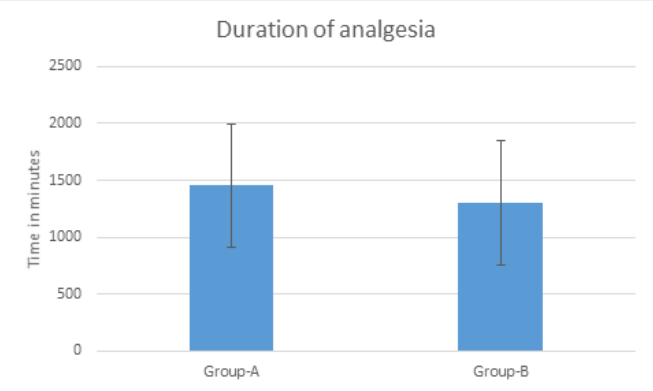

Figure 2: Comparision of duration of analgesia in both groups

Group A had a mean analgesia time of 1453 minutes (24 hours) with a standard deviation of 543 (9 hours) and Group B had a mean analgesia period of 1304 minutes (22 hours) with a standard deviation of 552 (hours) (9 hours 20 minutes). This was marginal. The value of P was> 0.05.

The difference in time for first rescue analgesia between Groups A and B was 435 214 minutes in Group A and 437 1701 minutes in Group B, which was not statistically significant (p>0.05).

In group A, the average time to begin analgesia was 15 minutes, while in group B, it was 14.7 minutes. It had no statistical significance (p value=0.3).

The incidence of nausea at 30 mins, 2 & 4 hours was found in 17%, 7%, and 7% of patients in Group A and 27%, 17%, and 10% of patients in Group B respectively. There was no nausea in any patient of either group at 6, 12, and 24 hours.

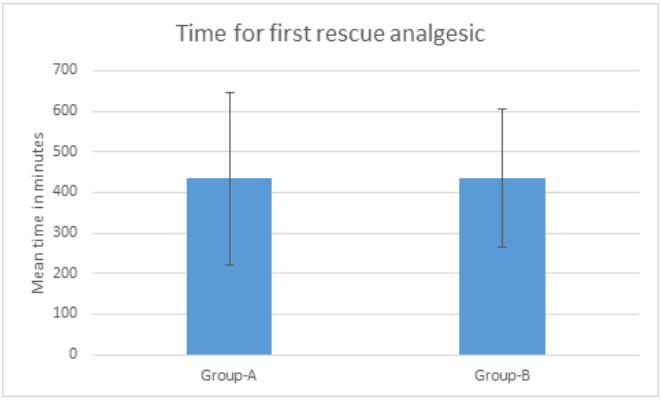

Figure 3: Mean time to first rescue analgesia in both groups.

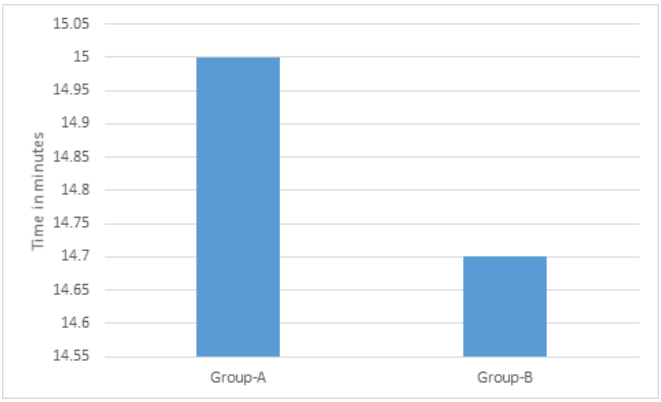

Figure 4: Comparison of onset of analgesia between two groups

The frequency of nausea between two populations at all periods is similar (p>0.05). No incident of vomiting was found in any patient within 24 hours. None of the patients needed antiemetic rescue in either category.

Discussion

The advantages of proper postoperative analgesia are apparent, and include a decrease in postoperative discomfort, a decrease

Table 2: Percentage of Patients with Postoperative Nausea And Vomiting

Nausea/ vomit-Ing	30 mins		120 mins		240mins		360 mins		12 hours		24hours	
	A	B	A	B	A	B	A	B	A	B	A	B
0	83%	73%	83%	83%	93%	90%	100%	100%	100%	100%	100%	100%
1	17%	27%	17%	17%	7%	10%	0%	0%	0%	0%	0%	0%
2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

in postoperative morbidity, and increased surgical outcomes in some forms of surgery. In addition to promoting healing and hastening surgical recovery, effective pain management facilitates regeneration. Reduced pain intensity, less analgesic side effects, and increased patient satisfaction are all advantages of successful geographic analgesic treatments.

Ropivacaine at 0.5 percent or levobupivacaine at 0.5 percent concentrations were used in the published trials evaluating the use of the TAP block for postoperative analgesia. Our study's key finding is that 0.25 percent Levobupivacaine and 0.5 percent ropivacaine are similarly effective in TAP block and have good postoperative analgesia in patients undergoing lower abdominal surgery.

In terms of post-operative analgesia, vas ratings, nausea/vomiting, and a few other side effects, our results in both groups are similar. The TAP block was found to be superior in terms of providing rapid postoperative analgesia, as determined by a lower VAS score. The latest TAP block study is split on whether it increases the incidence of postoperative pain.

In our sample, the mean 30-minute, 2, 4, 6, 12 and 24-hour VAS score in group A was 0.33±0.88, 0.66±1.09, 0.86±1.27, 1.1±1.47, 0.9±1.29 and 0.3±0.74 respectively. In group B, the mean VAS score was 0.36±0.88, 0.93±1.08, 1.40±1.35, 1.83±1.44, 1.26±1.22, and 0.7±0.91 respectively at 30 minutes, 2, 4, 6, 12 and 24 hours. In group A, the variation in mean VAS score was smaller at all periods yet was not important. Around ($p>0.05$)

Our findings in abdominal surgery are similar to those of McDonnell et al. and Carney et al. in open appendicectomy. He discovered in 2008 that anatomical TAP block greatly decreases postoperative pain scores in patients experiencing complete abdominal hysterectomy by up to 48 hours.[2–4]

In a randomized, double-blind clinical trial, McDonnell et al.[3] investigated the analgesic effectiveness of TAP block in patients within the first 24 hours following abdominal surgery. A blind investigator checked the patient in the post-anesthesia treatment unit and post-operatively at 2, 4, 6, and 24 hours after inducing anesthesia with 20 mL of 0.375 percent levobupivacaine inserted into the transversus abdominis neuro-fascial plane through the longitudinal lumbar triangles of Petit. On emergence (1± 1.4 vs 6.6± 2.8, $P<0.05$) and at all postoperative time stages, including 24 h (1.7± 1.7 vs 3.1 ±1.5, $P<0.05$), TAP block reduced visual analog scale pain scores (TAP vs control, mean±sd).[5–7]

TAP block by landmark procedure increases VAS score in the first 24 hours in patients undergoing major abdominal surgery, according to Sharma et al.[8] In 2012, Petersen et al.[9] discovered that patients undergoing laparoscopic cholecystectomy benefit from a US-regulated bilateral TAP block. The TAP block did not have stronger analgesia than placebo during inguinal hernia repair, according to Petersen et al.[9]

In 2012, a Cochrane study and meta-analysis found no proof of TAP block having a positive effect on postoperative pain levels. In this regard, it's worth noting that a meta-analysis found that the TAP block reduces postoperative opioid consumption, which may be a more important criterion for choosing an analgesic procedure.[10,11]

In a meta-analysis, twelvestudies, involving 556 patients, compared various doses of levobupivacaine with ropivacaine for different peripheral nerve blocks. The reason for the sustained analgesic effect following a single-shot TAP block is unclear. This is attributed to the TAP's lack of vascularization, which causes drug clearing to be slowed.[12] Also after TAP block, insufficient analgesia can either be attributable to technological deficiency or to a visceral pain aspect that is not resolved by TAP block. As a result, all local anesthetic procedures have an intrinsic failure risk of 5-20 percent, depending on the operator's skill. The major opioid-saving effects of TAP block in the postoperative phase are the most important clinical consequences of our results. Nausea-vomiting, pruritus, and respiratory depression can be associated with opioids, although they are very helpful in perioperative pain relief. TAP block may also help patients that are morbidly obese who have obstructive sleep apnea since it has an opioid-sparing impact. In patients with coagulopathy, it can be a better alternative to neuraxial block for intraoperative and postoperative analgesia.

A sufficient loss of pinprick sensation was characterized as surgical anesthesia in the distribution of nerves and

concomitant inability to move the extremities. The onset time of surgical anesthesia was compared in five trials in this meta-analysis. However, no statistically meaningful variations were seen between experiments (WMD 0.65; 95 percent CI: 1.25–2.56; heterogeneity: 2 = 12.02, P = 0.02, I2 = 67 percent). In six trials, the onset time of sensory block was registered. Between the included experiments, there was no substantial difference in the start time of sufficient sensory block between ropivacaine and levobupivacaine (WMD 3.57; 95 percent CI: 8.11–0.98). The pinprick technique was used to determine the onset time of sensory block in five experiments.

S. Gonzalez-Suarez, M. Pacheco, J. Roige, et al.[13] In the axillary brachial plexus block, 0.5 percent ropivacaine and 0.33 percent levobupivacaine were compared. The report concluded that the ropivacaine population had a faster onset of anesthesia.

Mageswaran R, Choy YC.[14] conducted a study titled "Comparison with 0.5 percent ropivacaine and 0.5 percent levobupivacaine for infraclavicular brachial plexus block." The mean time of onset (SD) for ropivacaine sensory block was 13.5 2.9 minutes, compared to 11.12.6 minutes for levobupivacaine (p = 0.003), according to this report.

Messina M, Magrin S, Bignami E, et al.[15] compared ropivacaine and levobupivacaine for superficial plexus anesthesia in carotid endarterectomy in a prospective randomized trial. They concluded that the sensory block onset period with 0.75 percent ropivacaine was 20±6 min and 29±8min with 0.5 percent levobupivacaine (P=0.003).

The block length was recorded in a total of 6 studies comparing levobupivacaine and ropivacaine. The meta-analysis showed that levobupivacaine, with a pooled WMD of −2.94 (95 percent CI −5.56 to −0.32), offered longer-term anesthesia than ropivacaine. Subgroup studies were carried out to determine the interstudy dose concentration deviation about the broad statistical variability that the I2 value was 93 percent. The effects did not vary substantially between 2 medications in the 0.75 percent subgroup of concentrations. While concentrations were 0.5 percent, levobupivacaine, close to the total pooled impact size, preferred the length of the block. In the levobupivacaine community, there was a tendency towards greater sensory block length (WMD, −1.16; 95% CI −1.89 to −0.43; P = 0.002; heterogeneity: $\chi 2 = 2.32$, P = 0.31, I2 = 14%), while the mean motor block duration occurred without any clinically significant differences (WMD, 0.09; 95% CI −0.51–0.69; P = 0.76; heterogeneity: $\chi 2 = 0.08$, P = 0.96, I2 = 0%)

Cline E, Franz D, Polley RD, et al.[16] found that the time of sensory analgesia was slightly longer in the levobupivacaine group (831 minutes) than in the ropivacaine group (642 minutes, P =.013) in a study comparing analgesia and efficacy of levobupivacaine and ropivacaine in the axillary brachial plexus block.

Fournier R, Faust A, Chassot O, et al.[17] discovered that in foot and ankle surgery, using 0.5 percent Levobupivacaine instead of ropivacaine produces longer analgesia following sciatic nerve block using the Labat protocol.

Liisanantti O, Luukkonen J, Rosenberg PH.[18] compared high-dose axillary brachial plexus block bupivacaine, levobupivacaine, and ropivacaine and found that 5 mg ml(-1) Ropivacaine-HCl provided significantly greater sensory and motor block pressure than levobupivacaine-HCl.

The clinical profiles of psoas block and sciatic nerve block with 0.5 percent levobupivacaine or 0.75 percent ropivacaine were compared by Piangatelli C, De Angelis C, Pecora L, et al.[19] The differences between Groups L and R were distinguished by Group L having a faster motor onset time and a longer time between motor and receptive resolution.

The number of patients who needed postoperative rescue analgesia was compared in four studies. The OR-based models revealed that the rate of postoperative rescue analgesia in the ropivacaine group was somewhat higher than in the levobupivacaine group (OR, 2.11; 95 percent CI 1.18-3.74; P = 0.01; heterogeneity: $\chi 2 = 3.82$, P = 0.28, I2 = 21%; heterogeneity: $\chi 2 = 3.82$, P = 0.28, I2 = 21%). In three studies, analgesic rescue was used when the visual analog scale was greater than 30 mm, and in one study, it was greater than 40 mm.

Analysis was carried out by Roxane Fournier, Alexandre Faust, Olivier Chassot, and Zdravko Gamulin et al.[17] using the same concentrations of levobupivacaine and ropivacaine, 0.5 percent, the average time for the first order for pain relief given by 20 mL levobupivacaine 0.5 percent for sciatic nerve block using the labels procedure was slightly longer than for ropivacaine for sciatic nerve block (1605 minutes [577 minutes]). The need for postoperative rescue analgesia was higher in the ropivacaine population (37 of 40 [92.5 percent] versus 30 of 40 [75 percent], P <0.034).

Complications during perianesthesia were reported in a total of 8 studies to date comparing the two medications. Otherwise, only 2 reports indicated that there were indeed relevant risks. Other than one episode of intraoperative bradycardia, the only adverse events observed were nausea and vomiting. In the ropivacaine group, marginally but not substantially more complications resulted than in the levobupivacaine group. It is well accepted that the most frequent adverse reactions are nausea, hypotension, and anemia. (all at a frequency of ≧10%). These complications are not only caused by LAs, since they may often be caused by surgical operations or other underlying conditions. There were no disparities in mean percentage increases for related parameters such as stroke index, cardiac index, PR duration, and convulsive threshold dose when the CNS and cardiovascular effects of two

drugs were compared under equal circumstances. In contrast to levobupivacaine-treated rats, ropivacaine-induced cardiac arrest needed considerably less adrenaline (epinephrine). In clinical practice, both LAs were well tolerated. To date, all studies comparing both drugs were using the same concentrations except for 2 studies.

Because of obvious differences in molecular weight and presence as a hydrochloride salt or a base, discrepancies in molarity must be noted when comparing the two drugs identified by Fournier et al.[17] Ropivacaine (225 mg) was found to be as effective as levobupivacaine (150 mg).

In patient-controlled continuous interscalene analgesia, Borghi et al.[20] found that 0.25 percent levobupivacaine produced comparable anesthesia production to that induced by equipotent (0.4 percent) ropivacaine concentration, but better anesthesia than that produced by equivalent (0.25 percent) concentration in a similar clinical setting.

On isolated nerves, it was discovered that the initiation and length of the nerve block induced by equimolar doses of two LAs are identical. So, in this case, ropivacaine and levobupivacaine can be used together, but further considerations should be weighed due to the difficulty and unpredictability of clinical practice.

Conclusion

According to our findings, In the TAP block, 0.25 percent Levobupivacaine and 0.5 percent Ropivacaine are similarly successful and have adequate postoperative analgesia. Because of its preferential sensory blockade via TAP block, ropivacaine is favored over levobupivacaine for post-operative analgesia. Since ropivacaine is less lipophilic than bupivacaine and has a lower potential to infiltrate large myelinated motor fibers, it causes less motor blockade. As a consequence, ropivacaine has a higher level of motor-sensory independence, which can be beneficial if motor blockade is not desired. Reduced lipophilicity has also been related to a reduced risk of inflammation in the central nervous system and cardiotoxicity.

References

1. Hutchins J, Delaney D, Vogel RI. Ultrasound guided subcostal transversus abdominis plane (TAP) infiltration with liposomal bupivacaine for patients undergoing robotic assisted hysterectomy: A prospective randomized controlled study. Gynecol Oncol. 2015;138(3):609–613. Available from: https://doi.org/10.1016/j.ygyno.2015.06.008.
2. McDonnell JG, O??Donnell B, Curley G, Heffernan A, Power C, Laffey JG. The Analgesic Efficacy of Transversus Abdominis Plane Block After Abdominal Surgery: A Prospective Randomized Controlled Trial. Anesth Analg. 2007;104(1):193–197. Available from: https://dx.doi.org/10.1213/01.ane.0000250223.49963.0f.
3. McDonnell JG, Curley G, Carney J, Benton A, Costello J, Maharaj CH, et al. The Analgesic Efficacy of Transversus Abdominis Plane Block After Cesarean Delivery: A Randomized Controlled Trial. Anesth Analg. 2008;106(1):186–191. Available from: https://dx.doi.org/10.1213/01.ane.0000290294.64090.f3.
4. Carney J, McDonnell JG, Ochana A, Bhinder R, Laffey JG. The Transversus Abdominis Plane Block Provides Effective Postoperative Analgesia in Patients Undergoing Total Abdominal Hysterectomy. Anesth Analg. 2008;107(6):2056–2060. Available from: https://dx.doi.org/10.1213/ane.0b013e3181871313.
5. El-Dawlatly AA, Turkistani A, Kettner SC. Ultrasound-guided transversus abdominis plane block: description of a new technique and comparison with con-ventional systemic analgesia during laparoscopic cholecystec-tomy. Br J Anaesth. 2009;102(6):763–767. Available from: https://doi.org/10.1093/bja/aep067.
6. Niraj G, Kelkar A, Hart E, Kaushik V, Fleet D, Jameson J. Four quadrant transversus abdominis plane block and continuous transversus abdominis plane analgesia: a 3-year prospective audit in 124 patients. J Clin Anesth. 2015;27(7):579–584. Available from: https://dx.doi.org/10.1016/j.jclinane.2015.07.005.
7. Belavy D, Cowlishaw PJ, Howes M, Phillips F. Ultrasound-guided transversus abdominis plane block for analgesia after Caesarean delivery. Br J Anaesth. 2009;103(5):726–730. Available from: https://dx.doi.org/10.1093/bja/aep235.
8. Saxena A, Bansal R, Mittal A, Shrivastava U, Sharma P, chand T. Evaluation of postoperative analgesic efficacy of transversus abdominis plane block after abdominal surgery: A comparative study. J Nat Sc Biol Med. 2013;4(1):177. Available from: https://dx.doi.org/10.4103/0976-9668.107286.
9. Petersen PL, Stjernholm P, Kristiansen VB, Torup H, Hansen EG, Mitchell AU. The beneficial effect of transversus abdominis plane block after laparoscopic cholecystectomy in day-case surgery: A randomized clinical trial. Anesth Analg. 2012;115:527–560. Available from: https://doi.org/10.1213/ane.0b013e318261f16e.
10. Charlton S, Cyna AM, Middleton P, Griffiths JD. Perioperative transversus abdominis plane (TAP) blocks for analgesia after abdominal surgery. Cochrane Database Syst Rev. 2010;(12):7705. Available from: https://doi.org/10.1002/14651858.cd007705.pub2.
11. Palmisani S, Arcioni R, Benedetto PD, Blasi RAD, Mercieri M, Ronconi P. Ropivacaine and levobupivacaine for bilateral selective ankle block in patients undergoing hallux valgus repair. Acta Anaesthesiol Scand. 2008;52(6):841–844. Available from: https://dx.doi.org/10.1111/j.1399-6576.2008.01630.x.
12. Singh M, Chin KJ, Chan V. Ultrasound-guided transversus abdominis plane (TAP) block: a useful adjunct in the management of postoperative respiratory failure. J Clin Anesth. 2011;23(4):303–306. Available from: https://dx.doi.org/10.1016/j.jclinane.2010.05.012.
13. Gonzalez-Suarez S, Pacheco M, Roige J. Comparative study of ropivacaine 0.5% and levobupivacaine 0.33% in axillary brachial plexus block. Reg Anesth Pain Med.

2009;34:414–423. Available from: https://doi.org/10.1097/aap.0b013e3181ae729b.
14. Mageswaran R, Choy YC. Comparison of 0.5% ropivacaine and 0.5% levobupivacaine for infraclavicular brachial plexus block. Med J Malaysia. 2010;65:300–303.
15. Messina M, Magrin S, Bignami E. Prospective randomized, blind comparison of ropivacaine and levobupivacaine for superficial plexus anesthesia in carotid endoarterectomy. Minerva Anestesiol. 2009;75:7–12.
16. Cline E, Franz D, Polley RD. Analgesia and effectiveness of levobupivacaine compared with ropivacaine in patients undergoing an axillary brachial plexus block. AANA J. 2004;72(5):339–384.
17. Fournier R, Faust A, Chassot O, Gamulin Z. Levobupivacaine 0.5% Provides Longer Analgesia After Sciatic Nerve Block Using the Labat Approach Than the Same Dose of Ropivacaine in Foot and Ankle Surgery. Anesth Analg. 2010;110(5):1486–1489. Available from: https://dx.doi.org/10.1213/ane.0b013e3181d3e80b.
18. Liisanantti O, Luukkonen J, Rosenberg PH. High-dose bupivacaine, levobupivacaine and ropivacaine in axillary brachial plexus block. Acta Anaesthesiol Scand. 2004;48(5):601–606. Available from: https://dx.doi.org/10.1111/j.0001-5172.2004.00393.x.
19. Piangatelli C, Angelis CD, Pecora L. Levobupivacaine versus ropivacaine in psoas compartment block and sciatic nerve block in orthopedic surgery of the lower extremity. Minerva Anestesiol. 2004;70:801–808.
20. Borghi B, Facchini F, Agnoletti V, Adduci A, Lambertini A, Marini E, et al. Pain relief and motor function during continuous interscalene analgesia after open shoulder surgery: a prospective, randomized, double-blind comparison between levobupivacaine 0.25%, and ropivacaine 0.25% or 0.4%. Eur J Anaesthesiol. 2006;23(12):1005–1009. Available from: https://dx.doi.org/10.1017/s0265021506000962.

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